

Measuring Mercury (Hg) Emissions from Prescribed Burning

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Although the regulatory focus of the Environmental Protection Agency (EPA) is currently directed toward curbing Mercury (Hg) emissions from electric utilities, Hg emissions from prescribed burning present a potential impact on air quality. The sources of atmospheric Hg are controversial; a recent article in the Lufkin Daily News Texas included a debate between spokespersons for an electric utility and the US Forest Service concerning the relative importance of Hg emissions from power plants versus prescribed burning. Whatever the source of the emissions, Hg deposition is relatively high in the South. (Figure 1) In light of the elevated levels of Hg deposition in the South and the large acreage of Southern forests that are prescription-burned annually (2-4 million acres per year), the re-emission of atmospherically deposited Hg by Southern prescribed burning should be quantified. However, only limited data on Hg emissions from forest fires (prescribed or wild) in the US are available. Most of these data originate from regions outside the South. Estimates of Hg emissions from US wildfires in the lower 48 states vary from 3-14% of the total US anthropogenic emissions, and are based on extrapolation of data from the Western and Great Lake states. Our recent data from the Osceola National Forest (Florida), if extrapolated, suggest that South-wide emission of Hg from prescribed fire is small (0.2% of total US anthropogenic emissions). These data further suggest, although trends were not statistically significant, that prescribed fire may lead to the buildup of Hg in subsoil due to post-fire leaching of Hg from ashen fire debris. This retention of Hg in subsoil may reduce Hg to surface waters as runoff. These data provide an initial assessment of Southern prescribed fire's effect on the Hg cycle; however policy makers likely will require data from more than one site. DiCosty, Stanturf, Callahan, and Waldrop have been funded by the Joint Fire Sciences Program to compile a more comprehensive picture of the significance of mercury re-emission from prescribed burning in Southern forests. Hg volatilization during future fires and reduce the transport of

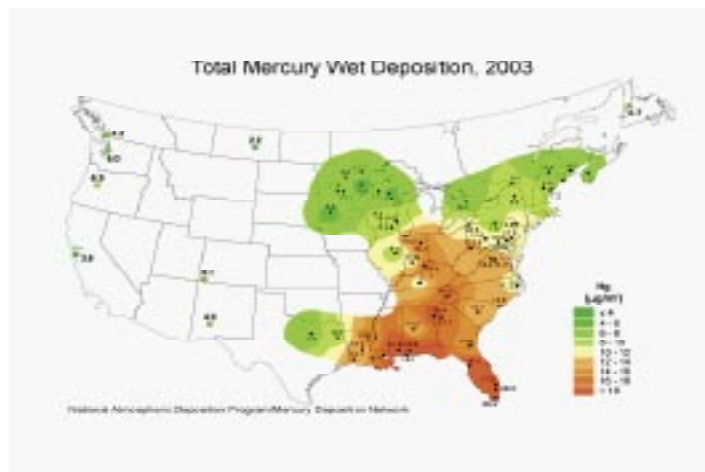


Figure 1. Mercury wet deposition in 2003 in the Eastern United States. (Source: National Atmospheric Deposition Program, <http://nadp.sws.uiuc.edu/mdn/maps/2003/03MDNdepo.pdf>)

